AMENDMENTS TO THE CLAIMS

This listing of claim will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A communications device for detecting user transmitted symbols encoded in spread spectrum waveforms (hereinafter "user waveforms") comprising

a first processing element which generates a matrix (hereinafter "gamma matrix") representing a correlation between a code associated with one user and those associated with one or more other users, the gamma matrix representing the correlation between user codes as a composition of a complex conjugate of the code sequence associated with one user and a complex conjugate of the code sequence associated with one or more other users.

a set of one or more second processing elements coupled with the first processing element, the set of processing elements generating a matrix (hereinafter "R-matrix") representing cross-correlations among user waveforms,

a third processing element coupled with the set of processing elements, the further processing element generates symbol estimates.

2. (Original) The device of claim 1, comprising

a memory that is coupled to the first processing element and the set of second processing elements,

the first processing element placing the gamma matrix in the memory for access by the set of second processing elements.

3. (Original) The device of claim 2, comprising

a multi-port data switch coupled to the first processing element and to the memory,

the first processing element places the gamma matrix in the memory via the data switch.

4. (Original) The device of claim 1, comprising

a host controller coupled to each of the set of second processing elements, the host controller generates a partitioning of the R-matrix, that partitioning divides the R-matrix into one or more portions based on a number of users and a number of available second processing elements,

the host controller assigns to each second processing element within the set of second processing elements a portion of the R-matrix to generate according to the partitioning,

each one of the set of second processing elements generates the assigned portion of the R-matrix according to the partitioning,

the host re-calculates the partitioning of the R-matrix when a user is added or removed from the spread spectrum system, and assigns a new portion of the R-matrix to each second processing element within the set of second processing elements according to that new partitioning.

5. (Original) The device of claim 1, comprising

a memory that is coupled to each of the processing elements in the set of second processing elements and the third processing element,

the set of second processing elements each placing its respective portion of the R-matrix in the memory for access by the third processing element.

6. (Original) The device of claim 5, comprising

a multi-port data switch coupled to each of the processing elements in the set of processing elements and to the memory,

each of the set of second processing elements placing its respective portion of the R-matrix in the memory via the data switch.

7. (Original) The device of claim 1, comprising

a host controller coupled with the first processing element, the set of processing elements, and the further processing element,

the host controller synchronizes data flow between the first processing element and the set of second processing elements,

the host controller synchronizes data flow between the set of second processing elements and the third processing element.

8. (Currently Amended) A communications device for detecting user transmitted symbols encoded in spread spectrum waveforms (hereinafter "user waveforms") comprising

a first processing element coupled with a multi-port data switch, the first element generates a matrix (hereinafter "gamma matrix") representing a correlation between a code associated with one user and those associated with one or more other users,

a set of one or more second processing elements coupled with the ~~mutl-port~~ multi-port data switch, each of the processing elements within the set generates a portion of a matrix (hereinafter "R-matrix") representing cross-correlations among user waveforms,

a third processing element coupled with the multi-port data switch, the further processing element generates symbol estimates.

9. (Original) The device of claim 8, comprising

a host controller coupled with the multi-port data switch, the host controller generates a partitioning of the R-matrix wherein the R-matrix is divided by the partitioning into one or more portions,

the host controller synchronizing the generation of the R-Matrix on the set of second processing elements such that each of the second processing elements within the set generates a portion of the R-Matrix according to the partitioning,

each of the second processing elements within the set coupled to the multi-port data switch, the second processing elements each placing its respective portion of the R-matrix in memory accessible by the third processing element.

10. (Original) The device of claim 9, comprising

the host controller generating a new partitioning when a user is added or removed from the spread spectrum system,

the set of second processors generating the portions of the R-matrix according to the new partitioning.

11. (Original) The device of claim 8, comprising

a memory coupled with the first processing element and the set of second processing elements,

the first processor placing in the memory the gamma matrix,

the first processor element updating the gamma matrix to reflect the addition or removal

of a user from the system.

12. (Original) The device of claim 11, comprising

a memory coupled with the set of second processing elements and the third processing element,
the set of second processing elements placing in the memory the portions of the R-matrix.

13. (Original) The device of claim 8, wherein

the first processing element generates the gamma matrix representing the correlation between user codes as a composition of a complex conjugate of the code sequence associated with one user and a complex conjugate of the code sequence associated with one or more other users.

14. (Original) The device of claim 8, wherein

the set of second processing elements generates the R-matrix of cross-correlations among user waveforms as a composition of the gamma matrix, a first component that represents correlations among time lags and a second component that represents correlations among multipath signal amplitudes and phase shifts associated with the waveforms transmitted by the users.

15. (Original) The device of claim 8, wherein

the third processing element generates the symbol estimates based on a composition of the R-matrix.

16. (New) A communications device for detecting user transmitted symbols encoded in spread spectrum waveforms (hereinafter "user waveforms") comprising

a first processing element which generates a matrix (hereinafter "gamma matrix") representing a correlation between a code associated with one user and those associated with one or more other users,

a set of one or more second processing elements coupled with the first processing element, the set of processing elements generating a matrix (hereinafter "R-matrix") representing cross-correlations among user waveforms,

a third processing element coupled with the set of processing elements, the further processing element generates symbol estimates.

17. (New) The device of claim 16, comprising

a memory that is coupled to the first processing element and the set of second processing elements,

the first processing element placing the gamma matrix in the memory for access by the set of second processing elements.

18. (New) The device of claim 17, comprising

a multi-port data switch coupled to the first processing element and to the memory,

the first processing element places the gamma matrix in the memory via the data switch.

19. (New) The device of claim 16, comprising

a host controller coupled to each of the set of second processing elements, the host controller generates a partitioning of the R-matrix, that partitioning divides the R-matrix into one or more portions based on a number of users and a number of available second processing elements,

the host controller assigns to each second processing element within the set of second processing elements a portion of the R-matrix to generate according to the partitioning,

each one of the set of second processing elements generates the assigned portion of the R-matrix according to the partitioning,

the host re-calculates the partitioning of the R-matrix when a user is added or removed from the spread spectrum system, and assigns a new portion of the R-matrix to each second processing element within the set of second processing elements according to that new partitioning.

20. (New) The device of claim 16, comprising

a memory that is coupled to each of the processing elements in the set of second processing elements and the third processing element,

the set of second processing elements each placing its respective portion of the R-matrix in the memory for access by the third processing element.

21. (New) The device of claim 20, comprising

a multi-port data switch coupled to each of the processing elements in the set of processing elements and to the memory,

each of the set of second processing elements placing its respective portion of the R-matrix in the memory via the data switch.

22. (New) The device of claim 16, comprising

a host controller coupled with the first processing element, the set of processing elements,

and the further processing element,

the host controller synchronizes data flow between the first processing element and the set of second processing elements,

the host controller synchronizes data flow between the set of second processing elements and the third processing element.